VxTob-03/9

Prior art

WBLSH Conventional method: as shown above, the sample and hold device is required to avoid large laser power during data writing. However, the wobble signal is cut during operation of the sample and hold device, deteriorating the signal quality after filtered by BPF.
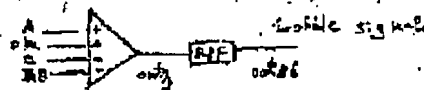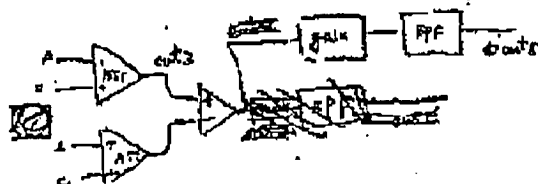

The figure at the left side shows subtracting signal by (A+D)-(B+C). The amplitudes of signals A and B, and that of C and D are much closed. Thus, only wobble signal is left by subtracting signal B from signal A and subtracting signal D from signal C. In addition, the amplitude of the wobble signal will not causing the circuit saturation. Thus, better signal quality is obtained without using the sample and hold device.
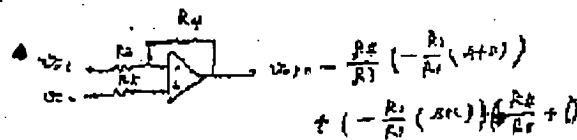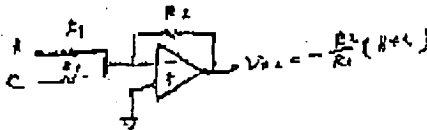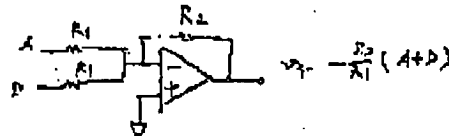

$$V_0 = (1 + \frac{R_4}{R_1})(A+D) - \frac{R_3}{R_2}(B+C)$$

$$1 + \frac{R_4}{R_1} = \frac{R_3}{R_2} \quad = \frac{R_3}{R_2}[(A+D)-(B+C)]$$
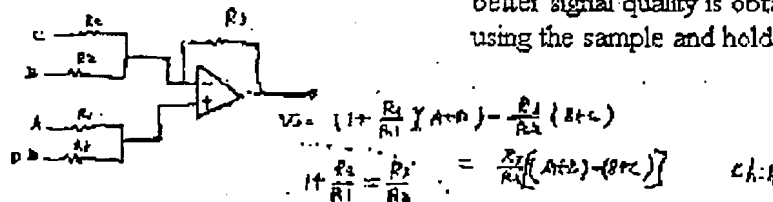
VIT63-0079

As shown above, signals A, B, C, and D are attenuated using attenuators before providing to the circuit. Thus, signal amplitudes are similar to data reading operation. Next, the wobble signal is obtained at out3 by subtracting the attenuated signal B from the attenuated signal A and subtracting the attenuated signal D from the attenuated signal C. Finally, the wobble signal is gained to an original power level. Thus, better signal quality is also obtained without using the sample and hold device.

$$V_1 = -\frac{R_2}{R_1}(A+D)$$

$$V_2 = -\frac{R_2}{R_1}(B+C)$$

$$V_{out} = -\frac{R_4}{R_3}\left(-\frac{R_2}{R_1}(A+D)\right) + \left(-\frac{R_2}{R_1}(B+C)\right)\left(\frac{R_4}{R_3}+1\right)$$

$$is = \left[\frac{R_4}{R_3}\cdot\frac{R_2}{R_1}\left[(A+D)-(B+C)\right]\right]$$

$$\text{if } 1+\frac{R_4}{R_3} = \frac{R_2}{R_1},$$